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Vol. XXV] JANUARY 1959 [No. 7

USE AND ABUSE OF STEROIDS IN SKIN DISEASES

By

Dr. M. NATARAJAN, M.B.,Z.D.V. (Vien.), F.D.S. (Lond), Madras.

Introduction :

It is said that "he who generalizes generally lies". Let it not be said that there was too much generalization today. It is my genuine wish that the subject will be appealing to you all, as the stepping in, of the steroids, specially the cortico steroids in the realm of modern theraputics, has revolutionized the outlook on many diseases, dermatological maladies in particular. It is amazing to learn about the wide range of their action their speed and the dramatic recovery in certain conditions. We come across, in modern journals, descriptive terms like miraculous, incredible, wonderful etc., attributed to the steroids. Before we dwelve in to the details of their use and abuse it is useful to refresh our memories about them.

The Steroids :

The steroids are complex lipid substances found in the body. Some are formed in the liver and mix with the bile. However the most important steroids are:

1. The steroid hormones of the adrenal cortex.
2. Male sex hormone......... ... Testosterone.
3. Female sex hormone........... Estrogen and Progesterone. (Ovarian).

It is worthwhile remembering that Vit. D. is also a steroid. We will confine ourselves chiefly to the Cortico steroids this evening.

The Endocrine system is Nature 's gift to man. The eternal co-ordination and the sweet symphony of their mutual influence and functioning surpasses all artificial organizations. And the Adrenals form the essential links of this system. The Adrenal Cortex, to date, produces about 30 substances — all steroids — with hormonal properties. Out of these only seven have been clearly defined. They have been arbitrarily divided in to two groups viz, the mineralosteroids and the gluco steroids. Current opinions are that this grouping is misleading and erraneous.

* Lecture delivered at the Trichy Branch of I. M. A. on 17—5—1958.

However it will be helpful to accept it temporarily. The two mineralo Cortico-steroids —Desoxy corticosterone and the recently defined aldosterone are chiefly concerned with mineral metabolism and with corbohydrate metabolism to a lesser extent. Aldosterone is much more powerful than desoxy corticosterone. Lichtwitz and Parlier call it the true sodium chloride hormone. It is said to be about 20 times as powerful as DOCA. Hence their use is restricted to adreno-cortical—insufficiencies.

The remaining five steroids mainly exert their action on corbohydrate metabolism. They raise the blood sugar level by

1. Antagonizing the action of Insulin (Peripheral utilization)
2. Formation of sugar from proteins (Gluco neo genesis).
3. Lowering the renal threshold for sugar (Glycosuria).

Two of these are CORTISONE and HYDROCORTISONE. The rest have obscure clinical application.

Cortisone

(Compound E Kendall) 17 hydroxy —11— dehydro cortico sterone. Its chief metabolic effects are:

1. Retention of sodium and water.
2. Excretion of potassium, nitrogen and phosphorus.
3. Increase in blood sugar level.

Pharmacological and clinical effects can be dealt with later.

Hydrocortisone :

(compound F Kendall) 17 hydroxy cortico sterone.

It is about twice as powerful as cortisone. Otherwise the metabolic effects etc., are identical with cortisone. It is believed to be the true adreno gluco Corticoid in man, Cortisone being a precurs or a metabolite thereof.

These two though called gluco steroids have considerable action on the mineral metabolism as well. Consequently their clinical applications had to be careful. Sometimes there 'side effects' were so much, as to warrant interuption in therapy and total withdrawal in some cases. This lead to scientific efforts in the search for better derivatives with more potency and less 'side effects'. The first step in this direction resulted in halogenating them. The hydrogen atom in the 9th a molocule was replaced by a halogen atom — fluorine — resulting in fludro derivatives. The prominent one in the group was 9a fludro hydrocortisone. —(compound FF). This compound was 10 to 15 times as effective as hydrocortisone. Unfortunately the 'side effects' also increased as much. So its clinical use was limited to adrenocortical deficiencies and topically for its anti inflammatory effect.

In 1955 American workers succeeded in dehydrogenating, with the help of micro organisms, cortisone and hydrocortisone in Δ' position and obtained dehydro cortisone — prednisone, and dehydro hydrocortisone — prednisolone. This was a real progress in the sense that these two derivatives are 3 to 5 times as potent as their parent substances, with very — little disturbance of the mineral metabolism. Hence they are used more and more in therapy other than substitution.

Physiological Functions & Pharmacological Actions.

We will deal with this systematically.

1. *Carbohydrate Metabolism*: Steroids mainly act on carbohydrate metabolism as mentioned a little earlier. Viz., formation of sugar from proteins, antagonizing insulin action and lowering renal threshold for sugar.

2. *Protein Metabolism*: Proteins are utilised and in prolonged therapy negative nitrogen balance is the result. Hence patients are put on high protein diet.

3. *Lipid Metabolism :* Steroidal action on lipid metabolism is not clearly understood. They are said to increase ketanuria. Patients' on long — treatment develop peculiar adiposity of the trunk, shoulder etc.,

4. *Water and Electrolyte Metabolism :* There is retention of sodium and water and excretion of potassium, and phosphorous. Prolonged cortisone administration therefore needs restriction in salt intake and substitution of potassium salts orally.

5. *Effects on Endocrine system*: They interfere with normal adreno-cortical-pituitary relationship which will be dealt with a little later.

6. *Effect on Muscloskeleteal System*: Steroids are said to weaken the muscles and produce osteoporosis after prolonged administration.

7. *Effects on Mesenchyme :* They have a peculiar suppressive action on the mesenchyme. They alter their response to diseases irrespective of cause. So mesenchymal or collagen diseases rapidly respond to steroids.

8. *Effects on blood :* Administration of cortisones cause a rapid fall in circulating eosinophils. There is also a perceptible lympho cyto-penia and reticulocytosis.

9. *Effects on C.V.S:* Smaller doses do not upset C. V. S. function. Larger doses may elevate the B.P.

10. *Effects on G. I. System :* The action is by stimulation of gastric secretion. This is advantageous in so far as it stimulates the appetite. In excess they cause, gastric acidity and in cases of ulcers exacerbations of them or haemorrage and sometimes perforation. The last one is all the more dangerous because a perforation may be symptomless and may go unnoticed during steroid therapy and may even prove fatal.

11. *Influence on Psyche*: The mode of action is not yet known. The steroids stimulate and activate the patient. In chronic cases this is welcome as they cheer and buck them up. Too much may lead to euphoria.

Theraputic Applications :

A. *Substitution*: The primary use of cortio steroids. is substitution. It is analagous to use of Insulin in Diabetes. In carefully controlled dosages prolonged substitution in adreno cortical deficiencies no danger or complication need be expected. However when the steroids are used for their beneficiary properties in conditions other than deficiencies, the so called — ' side effects' have to be kept in mind. It is important to note this difference. In substitution we are replacing a deficit hormone. In therapy other than this, we are introducing unphysiologically large doses of hormone — they act only in such doses .. in patients who have normal functioning cortex producing enough hormone to the needs of the body. Because of this, we get, in prolonged therapy, symptoms similar to adreno cortical hyperfunctioning—like Cushing's syndrome — rounding of the face-the moon face, hirsutism, deposition of fat in the trunks, rise in B.P. osteoporosis, sexual dystrophy etc. An artificial —

interference in the smooth functioning of the endocrine system has its consequences. The most important of them being the disturbance of the adrenocortical ant. pituitary relationship. Cortisone and the adrenotropic hormone — ACTH —— have functional relationship. Production of cortisone is controlled by ACTH by its cortical stimulation or inhibition. Interestingly enough the production of ACTH itself (by ant. Pituitary) depends on the blood level of Cortisone. If the level of this falls, it acts as a signal for the production of more ACTH which in turn stimulates the adrenal cortex to produce more cortisone. In parenthesis it is to be said that hypothalams also has a control over ACTH production. When optimum blood level is reached, ACTH inhibits cortisone production. So it follows that if there is too much cortisone in the body there is no stimulus for ACTH production and also cortisone production. In other words, prolonged artificial supply of cortisone to the body suppresses natural cortisone production. This is exactly what happens in protracted therapy. So long as the hormone is supplied this way, there is no trouble. When this is withdrawn abruptly, serious trouble sets in. Sudden demand is made on the cortex for the natural hormone. And the cortex fails due to functional inactivity since its production was too little or nil. This throws in, a state of acute adrenocortical insufficiency. This leads to the 'rebound' phenomenon. However the picture will be entirely different if the withdrawal is a planned procedure. By this, time is given for the cortex to resume its normal function. If the so called tailing of the dose is adopted the adreno cortical ant. pituitary balance is stabilized and no untoward symptoms will manifest. In prolonged steroid therapy stimulation of cortex with periodical ACTH administration, is also based on this principle.

B. Pharmacodynamism: This means chiefly anti-inflammatory and antiphlogistic effect, as also antiproliferative properties. This is effected by their action on Cellular premeability and activity, so that no toxin can reach the cell. These hormones have a inhibitory action on the mesenchyme. The cortisones will suppress any inflammation irrespective of the cause. The same applies to allergens as well. In no condition have they been able to act on the causative factor of the disease. They are useful only for symptomatic therapy. Cortisones are not drugs to 'cure' diseases, but are beneficial agents to relieve symptoms of diseases of different etiologies. They are used increasingly now a days in spite of this, for we can keep symptoms in check, as it were, as we deal with the basic cause, concurrently. A healthy combination of bacteriostatics and antibiotics with cortisones seems to be the present trend in therapy.

'Side Effects'

The term side effects is rather incorrect for they are not due to the toxicity of hormones. In fact they are mainfestations of hyper corticism. They are as mentioned earlier, mooning of the face, hirsutism, fat deposition, sexual dystrophy etc., since endocrines and vegetative nervous system are closely related, disturbances like dizziness. —palpitation, sweating, insomnia etc., are not uncommon.

Precautions :

What were considered contra indications are no more so. Some authorities go a step further and state that cortisones are very necessary in such cases. So it will be better to group them under "Caution-necessary" categories.

1. *Heart Diseases:* The steroids should be used with caution in individuals with myocardial damage. Retention of fluid may cause cardiac decompensation.

2. *Renal Disease*: Extra caution is essential in cases with a renal damage associated with oedema and oliguria.

3. *Gastric Disease*: Active peptic ulcer is a contra indication. Healed ulcers may be activated. If it is a life-saving measure, steroids can be used with extreme vigilance and care.

4. *Tuberculosis*: They can be used with care. Recent trends are to fruitfully combine steroids and tuberculostatic drugs.

5. *Infectious Diseases and Infections*: Since the chief cellular defence against infection is inhibited by steroids, it may leave the door wide open for infection to spread unchecked. So caution is necessary. Combinations of antibiotics and steroids is the current practice.

6. *Hypersensitivity to Drugs*: Certain diseases especially collagen diseases make the patient sensitive to steroids. In Such cases it would be safer to start with lower dosage initially and then increase it carefully.

7. *Psychic Conditions*: Prolonged use of steroids may effect psychological disturbances in patients who are predisposed to it. Extremes may better be avoided.

8. *Thyroid Conditions*: Prolonged use of steroids is said to suppress the thyroid. So supplemental therapy may be needed.

Complications:

They are not true complications. At best they are disturbances in metabolism manifest in the following ways :—

1. Hyperglycemia and Glycosuria.

2. Retention of Sodium and water leading to increased blood volume and hypertension.

3. Negative nitrogen balance with loss of protein from body.

4. Potassium loss and if in excess mainfesting hypokalimic alkalosis.

5. Hirsutism and acneform eruptions.

6. Cushing 's syndrome.

7. Lowered resistance to bacterial infections.

Controls to Correct Complications:

1. Dosage must always be reduced consistent with clinical response.

2. B.P. to be taken daily or alternate days.

3. Weight. Weigh the patient weekly.

4. Haemogram and E. S. R.

5. Fasting blood sugar, and urine for sugar daily.

6. Eosino philic count frequently.

7. Patient to be put on high protein diet.

8. If high doses of cortisone are given low sodium in diet. In addition 3 to 5 Gm. of potassium by mouth.

9. In prolonged administration, testosterone 10—25 m.g. daily or alternate days to negativate nitrogen imbalance.

10 Taking particular precaution to tail off the dose, and avoiding abrupt stopping.

11. Last but important is stimulation of adrenal cortex periodically by ACTH or covering with ACTH when about to stop or immediately after stopping. In prolonged steroid therapy 20 to 40 Units ACTH fortnightly is sufficient. when stopping steroid therapy Kaiser recommends the following schedule. The steroid is reduced slowly and discontinued and on the three subsequent days ACTH depot 40 units given daily. Or the steroid is reduced slowly; ACTH depot 20 to 30 I. U. given daily for three days and the steroid stopped on the 3rd day followed by depot ACTH in reduced dosage for subsequent three days.

(*To be continued*)

NUTRITION AND LIVER DISEASE*

by

Dr. S. SRIRAMACHARI B.Sc., M.D.

Pathologist, Nutrition Research Laboratories, Indian Council of Medical Research, Coonoor.

I feel greatly honoured to be called upon to address the Annual Meeting of our Association. I shall deeply cherish it as a token of your affection towards all of us on the verge of our impending departure to Hyderabad.

I have chosen the subject of "Nutrition and Liver Disease", since it is a problem I have been working for the last 8 years. During this period I had the opportunity of studying along with my colleagues in the Nutrition Research Laboratories, different aspects of both clinical and experimental liver injury, with particular reference to the role of nutrition. These studies have helped us considerably in understanding the fundamental principles of hepatic pathology. More recently, I had occasion to prepare for the Liver Diseases Sub-Committee of the I.C.M.R., a review on experimental dietary cirrhosis (Sriramachari, 1959). It gave me a wider perspective of the landmarks in the evolution of our ideas of nutritional pathology of the liver, interspersed by long periods of comparatively tardy progress. There yet remain vast and unexplored fields where our ignorance is collossal and there is need for further accessions to knowledge. To attempt to translate the polemics of academic research as applicable to day-to-day general practice is rather a difficult and onerous task. I am painfully aware that much of what I say might appear somewhat technical. I often wonder whether some of us in the research laboratories have not cut ourselves adrift from the main currents of medical practice. But a liason between medical research and practice is not only desirable but very essential. As Paul Klemperer put it - "The search for mechanisms to explain the basic alterations of form and function in the body characteristic for a disease has become the principle of investigative thinking in modern times." Indeed experimental nutrition and experimental pathology of the liver have completely reoriented our concepts of liver disease during the last 25 years. Most of you are familiar with the main trends and, I am sure, are guided by them in the dietary management of patients suffering from chronic liver disease. I shall try to trace the historical and geopathological aspects of chronic liver diseases, the more recent experimental foundations of the nutritional pathology of the liver and then draw comparisons with nutritional disorders of the liver in man. At appropriate places the lesions will be illustrated with the help of suitable photomicrographs. Lastly certain practical aspects in the dietary management of chronic liver disease will be made indicating the limitations in our present state of knowledge and the scope for future work.

Historical

Association between diet and liver disease dates back to times immemorial. Ascites due to enlargement of the liver as a clinical entity appears to have drawn the attention of even our ancient physicians like Charaka and Susruta. Their empirical statements on the importance of diet in the causation of disease might appear somewhat audacious. But they reflect upon their keen powers

* Lecture delivered at the Nilgris Branch on 25 October, 1958,

of observation and is a tribute to the unerring human instinct in trying to explain the relation between diet and disease even in those remote times. Charaka in his discourse on "Udara Roga" refers to their causation by faulty diet. There is mention that excessive internal oleation, probably purgation, is one of the causes of "Jalodara" or ascites It is also significant that amidst the plethora of therapeutic prescriptions, he recommended strict salt-free dietary treatment with milk for months or even an year as the most efficacious. Susruta (100 A. D.), who had a better comprehension of the anatomical basis of disease refers to "YAKKRUDDALYUDARA" as one of the eight different varieties of ascites. Literally translated, it means ascites due to enlargement of the liver. Amongst the probable causative factors, he refers to the baneful effects of impaired digestion, inanition and consumption of improperly cooked or spoiled food in addition to other causes. Speculative as they are, such generalisations must have been founded on the basis of human experience. The very recent identification of the hepatotropic Factor 3 in milk as an organic complex of the trace element selenium by Schwarz and Foltz (1957) should serve as a reminder that perhaps we have not yet exhausted our knowledge of the wholesomeness of milk in particular and diet in general.

Geopathology of Hepatic Cirrhosis and Cancer

The importance of nutritional factors in the causation of cirrhosis appears to be more than a chance association for workers in the tropics. There is a very close overlap between the geographic distribution of protein malnutrition on the one hand and hepatic cirrhosis and cancer on the other. In a comprehensive survey of the problem in different parts of the world, Patwardhan (1955) summed up the situation regarding adult liver damage. There is a general opinion that hepatic cirrhosis in adults is far more common in the tropics than in the temperate regions. This seems to be true particularly of the African continent. Thus Vint (1931) and Davies (1948) found 'monolobular fibrosis' with round cell infiltration in almost every autopsy specimen of liver in East Africa. In South Africa, Gillman and Gillman (1951) observed hepatic lesions in 87·4% of 261 Africans who died suddenly due to accidents. Reports from other tropical countries also speak of the high incidence of cirrhosis of the liver, although not as high as in Africa. It has been estimated that 32·6 deaths per 100,000 population in India is attributable to hepatic cirrhosis (Menon and Annamalai 1935). The corresponding figures for the United Kingdom is about 4·8. The incidence of hepatic cirrhosis in autopsy series is considerably higher in certain parts of the tropics. In India, the Northern Circars of Andhra Pradesh have a much higher incidence. Tirumurthi and Radhakrishna Rao (1934) reported an incidence of 9·3% in 535 autopsies at the King George Hospital, which has been repeatedly confirmed by several other investigators (Menon and Annamalai. 1935; Veliath and Srinivasachar, 1951, Reddy, 1951). The autopsy records for the residuary state of Madras showed a somewhat lesser incidence of hepatic cirrhosis (3·7%) as opposed to 7·2% in the Andhra area. In Andhra, the autopsy incidence of cirrhosis seems to rank next in importance to malignancy and tuberculosis (Reddy 1951). These figures compare very well with similar data obtained from other tropical countries In Colombo (Ceylon) an incidence of 3·0% is reported by Fernando Mendonza and Rajasuriya (1951). In Indonesia it is said to account for 2·8 % of deaths in women and 6·8 % deaths in men. Dr. Venkatachalam observed quite a high incidence in the natives of New Guinea (1957). In China it was believed to be 4 to 7% of all autopsies and in certain parts of

Africa 6·7%. Equally high incidence is observed in certain Latin American countries; one report gives an incidence of 8·5% in Chile. The corresponding figure for the United Kingdom is about 1·5% (Dible 1957.) In the United States where alcoholism is prevalent, a somewhat higher incidence (2 to 4%) is observed (Patek 1956). The geographic distribution and incidence of carcinoma of the liver seems to run a close parallel to that of cirrhosis. At a recent symposium on cancer of the liver among African Negroes held in Kampala, Uganda in 1956, collation of information from several continents revealed very useful information. In the United Kingdom and the Continent the autopsy incidence is about 0·3% (Dible 1957), whereas in the United States, it is somewhat higher ranging from 0·18 to 0·56% of all autopsies (Steiner 1956). In many of the Oriental countries a consistently higher incidence, average of 0·76% (0·34 to 1·81%) is observed. Hepatic cancer forms the largest percentage of malignancies in these regions (Berman 1951). The very high incidence of carcinoma in cirrhotics than non-cirrhotics is also noteworthy. Thus the problem of chronic liver diseases are really of world-wide importance and seem to be inextricably linked with poverty and malnutrition.

Recent Advances About the Structure & Functions of Liver

The great and rapid strides in the understanding of the pathological physiology of the liver have been possible because of progress in the fundamental knowledge of the micro-anatomy and vasculature of the liver. The ever-increasing array of liver function tests have helped in assessing the metabolic, detoxifying and excretory functions of the liver. No wonder, nutritionists have stumbled upon the liver which is one of the first organs to be affected in experimentally induced malnutrition. Lastly the introduction of liver biopsy technique is primarily responsible for studying the sequential changes in the liver and investigating the pathogenesis of chronic hepatic deseases in man. A multidisciplined approach by several teams of workers during the last 25 years has revealed a basic unity or pattern behind the several types of hepatic damage induced by seemingly different agents such as toxic, bacterial and viral poisons as well as dietetic deficiencies. The unitary concept of the potentiating action of toxipathic and trophopathic damage of the liver has been set forth admirably in the monograph by Himsworth (1950).

Patterns of Liver Cell Injury and their sequelae: Under the continuing influence of one or more of the above noxious influences, the liver, especially the parenchyma, undergoes different types of damage. Some are reversible and some eventually lead to cirrhosis or even hepatic cancer. The following are some of the more common types of liver cell damage: (1) The liver cells may be swollen and accompanied by rarefaction of cytoplasmic protein giving rise to the so-called plant-cell like appearances. (2) Abnormal amounts of fat may accumulate in the liver cells. The fatty change can be of varying severity and localisation within the liver lobule. It may be generalised, periportal or centrilobular. (3) The foregoing types of damage may lead to insidious necrosis of liver cells and accompanying cellular reaction. However, a more dramatic and widespread necrosis of the liver cells can be encountered independent of the above changes. The necrosis may be spotty, zonal, submassive or massive. (4) If the necrotic changes are of sufficient intensity and duration, they not only stimulate regeneration of the parenchyma, but also result in either temporary or permanent mesenchymal changes. If the latter predominate, either hepatic fibrosis, cirrhosis or cancer can develop. The

successful production of all these types of liver damage and their sequelae has been achieved in experimental animals and it has contributed greatly to our knowledge of human liver disease.

Experimentally Induced Dietary Liver Injury

(i) **Quantitative protein deficiency** : The livers of young growing animals maintained on 3 to 5% casein diets, otherwise, adequate with regard to calories and B vitamins, show marked reduction of cytoplasmic basophilia (Ramalingaswami, Sriramachari and Patwardhan 1954). They may also develop a mild to moderate degree of fatty change, which is very often periportal in distribution, especially if the diet is adequate with regard to choline (Best, Hartroft Lucas and Ridout 1955; Sriramachari and Patwardhan 1959). Obviously, such fatty livers do not respond to choline or methionine and can be cured only by administering high class proteins. The clinical importance of the findings will be discussed later.

(ii) **Qualitative protein deficiency** : It is now universally accepted that single source vegetable protein diets are notoriously deficient in one or more of the essential amino-acids like lysine, threonine and tryptophane. Feeding animals with poor quality proteins even at moderate levels (10%) often result in moderately severe periportal fatty livers. (Shils, Friedland and Stewart 1954, Sriramachari, Ramachandran, Phansalkar and Patwardhan 1959). These fatty livers, like the foregoing are refractory to choline therapy. But judicious combination of more than one vegetable protein, keeping the level of protein constant, can effectively correct the fatty change. Very recently, we have carried out a large scale investigation with many of the locally available cereals. Replacing part of the protein supplied by the cereal with pulse and leafy vegetable protein showed considerable improvement of the fatty livers (Sriramachari, Ramachandran, Phansalkar and Patwardhan 1959). These observations, while offering hope to the most orthodox vegetarians, has a wider public health and economic importance in the eradication of protein malnutrition and the prevention of kwashiorkor in many parts of the world. In fact, several investigators like Dean in Africa and Dr. Gopalan and his colleagues have been successfully treating kwashiorkor with locally available proteins like soya bean and Bengal gram.

(iii) **Deficiency of lipotropic factors** : Experimental animals subjected to a gross deficiency of choline, methionine, and under certain conditions related lipotropic factors (pyridoxine, inositol, riboflavine, niacin and Vitamin B_{12}) suffer from progressively increasing fatty livers. These changes are very often confined to the centrilobular zones. In this respect they are not quite comparable to the periportal fatty livers of malnourished humans. Stemming from the pioneering observations of Best, Hershey and Huntsman in 1932, this type of fatty liver has been most exhaustively studied by innumerable workers. The severity of fatty infiltration is enhanced by deficiency of dietary protein and excess of calories derived from carbohydrates or preferably fat. Such diets are commonly called *hypolipotropic* diets. It is in this type of fatty liver that the beneficial effects of choline and methionine are best seen, which has resulted in their wide application in clinical practice, in spite of the fact that even the most intensive treatment does not cure completely the fatty livers in man. The enigma has been partly solved by the recognition of the afore-mentioned periportal fatty livers which respond only to protein. In view of the widespread use or abuse of choline and methionine in all types of known and unknown or suspected liver damage, it would not be out of place to sound a note of caution. In any rational management of nutritional fatty livers in man, it is thus very important to assess the type of fatty liver in question. More often than

not, a liberal diet containing large amounts of proteins of good quality supplemented with adequate amounts of B vitamins might yield more satisfactory results than indiscriminate use of lipotropic factors.

(iv) **Endocrine fatty livers**: A third type of fatty liver has come to the forefront in recent years. Hormonal imbalances of different types have long been known to interfere with fat metabolism in the body. Under such conditions, fat accumulates in the liver, especially in the periportal regions. Recently, Gillman and Gilbert (1957) have brought forward convincing evidence in favour of fatty livers of endocrine origin in the baboon. We are all familiar with the protein manifestations of malnutrition. The endocrine glands also suffer damage in protein malnutrition (Gopalan 1956). It is possible that the periportal fatty livers of pure protein deficiency might have atleast partly been mediated by endocrine imbalances..

(v) **The consequences of fatty infiltration. Hepatic fibrosis and cirrhosis**: The mere presence of fat in the liver cells does not constitute a serious disturbance of liver function. However, if the fatty change is prolonged and severe, it results in the death of small groups of liver cells followed by mesenchymal cellular infiltration. Initially, there are a few mono-nuclear cells and with progress of time increasing numbers of fibroblasts and extracellular fibrous tissue are laid down in the liver. With progressive fibrosis there is disorganisation of the lobular architecture. The accompanying regeneration of the parenchyma only contributes to the formation of pseudolobules. Of the three known types of fatty livers, the sequelae of hepatic fibrosis and cirrhosis have been observed to develop in choline deficient fatty livers. So far they have not been reported to follow protein deficient or endocrine fatty livers. Further intensive study of this minor but intriguing discrepancy might throw fresh light on the very pathogenesis of cirrhosis.

At this stage, it has to be pointed out that although malnutrition might have initiated the train of events leading to cirrhosis, in the advanced stages dietary rehabilitation is of little avail. In fact, some of my recent experimental results indicate that once the mesenchymal reaction is stimulated, large amounts of dietary protein will only help in the greater production of fibrous tissue (Sriramachari 1958 a and b). I am bringing this rather academic fact to your attention for the only reason that we may have to exercise caution in giving excessive amount of proteins to cirrhotics. The other dangers of high protein therapy in precipitating hepatic come due to porto-systemic encephalopathy in man and in experimental animals (meat intoxication) are too wellknown. I shall not dwell at length upon them.

(vi) **Dietary hepatic necrosis**: Wide-spread necrosis of liver cells has been demonstrated in the animals given special necrogenic diets which are drastically deficient in certain protective or hepatotropic factors (Himsworth 1950). The sudden death of cells is attributed to an interference to the enzyme pattern or metabolic activity of liver cells. To date, deficiency of cystine (Weichselbaum 1935), α-tocopherol (Schwarz 1944; Gyorgy 1947), and an organic selenium complex, called Factor 3 (Schwarz 1951; Schwarz and Foltz 1957), have been shown to lead to dietary hepatic necrosis which is very often fatal. The few animals that survive show a post-necrotic collapse fibrosis and very rarely a true cirrhosis. It is not certain whether such drastic dietary deficiencies ever exist even in the worst human dietaries. On the contrary, it is generally believed that hepatic necrosis in man is more often due

to viral hepatitis. It is quite possible that preceding malnutrition might enhance the damage and also interfere with the orderly recovery.

(vii) **Nutritional factors in hepatic cancer**: The high incidence of hepatic cancer in regions where protein malnutrition and cirrhosis are more prevalent, prompted several experimental studies. It is now well recognised that the nutritional status of the animal influences the production of hepatic cancer by some of the common carcinogenic substances like 2-acetylaminofluorene or p-dimethylamino-azo-benzene. A severe restriction of calories and deficiency of riboflavin seem to reduce the formation of tumors (Tannenbaum 1956). A direct effect of diet on carcinogenesis has also been demonstrated. Prolonged choline deficiency in the rat has been shown to produce spontaneous hepatomas in the absence of any other carcinogens (Salmon and Copeland 1954). These observations have a profound bearing on the world-wide distribution of hepatic cancer, especially in the underdeveloped areas. However. the precise relationship between dietary deficiencies and hepatic cancer in man must await more definite studies.

(iii) **The influence of non-nutritional factors on the course of experimental liver injury**: Although the foregoing types of liver injury have been successfully produced in experimental animals, sometimes there are variations in the intensity of the lesions. They are due to differences in the experimental conditions. Young animals are more susceptible and males are affected more often than females. The pre-experimental body reserves of particular dietary constituents and environmental factors such as temperature are known to exert an adverse influence on the production of liver damage. Lastly, general inanition or calorie restriction may prevent the development of the lesions (Ramalingaswami, Sriramachari and Patwardhan 1958). These factors probably explain the wide individual variations often observed in clinical liver diseases like kwashiorkor and cirrhosis.

Human Dietary Liver Disease

Unlike experimental investigations, single deficiencies are rarely encountered in clinical practice. Often there are multiple deficiencies and it is difficult to pin-point the etiological factors. Nevertheless, there are a few clear cut clinical types of chronic liver injury which merit serious consideration.

(i) **Nutritional oedema in adults**: Adults suffering from prolonged malnutrition due to deficiency of proteins and possibly other vitamins develop oedema of nutritional origin with moderate ascites and hepatomegaly. It is a common site among the beggars thronging our large cities. The liver biopsies in the early cases show a protein deficiency type of vacuolation. There is rarefaction of cytoplasm with slight fatty change. In more severe cases, the fatty change may become more intense and lead to hepatic fibrosis and ultimately cirrhosis. The transition from malnutrition to cirrhosis can be followed with the help of serial liver biopsies and liver function tests (Sriramachari and Ananthachari 1954).

In chronic alcoholics who also suffer from a severe nutritional deficiency of proteins and vitamins and relatively excessive calories, there is a severe degree of fatty infiltration of the liver accompanied by marked mesenchymal changes (florid cirrhosis). Very often they lead to progressive cirrhosis of the Laennec type. This appears to be the commonest type of cirrhosis in many parts of South India (Veliath and Srinivasachar 1951; Sriramachari and Ananthachari 1954; Govinda Reddy and Sriramachari 1957). Both the alcoholic

as well as the non-alcoholic nutritional fatty livers can be prevented in the early stages by adequate dietary rehabilitation with protein-rich foods and a liberal supply of vitamins. Mere administration of choline and methionine may be of little help. In the advanced cases, hardly anything can be done save symptomatic management.

(ii) **Nutritional oedema syndrome or Kwashiorkor in children**: The baneful effects of protein malnutrition in children at a time when requirements for growth and maintenance are greatest have drawn worldwide attention in the wake of the second world war. Voluminous literature has been collected from all parts of the world. Our own laboratory has made notable contribution in this field. The important findings have been crystallised in the exhaustive review by Dr. Gopalan and Dr. Ramalingaswami 1955. It is now generally agreed that apart from severe protein deficiency, the diets are also lacking in some of the vitamins. Probably bacterial infections and parasitic infestations play a contributory role. Though not invariable, in a large proportion of cases there is a severe fatty infiltration of the liver, especially in the periportal regions. There is considerable reduction in the liver cell constituents particularly protein, nucleoprotein and glycogen content (Sriramachari and Ramalingaswami 1953). Adequate dietary rehabilitation with either skimmed milk or locally available proteins like soyabean or roasted Bengal gram result in a remarkable disappearance of fat and return to the normal structure. Although occasionally foci of mesenchymal cells are seen in some of the cases at the height of the disease, they rarely lead to significant hepatic fibrosis, leave alone cirrhosis. Contrary to earlier expectations, long-term follow up studies from several parts of the world have shown that cirrhosis is an infrequent sequelae of kwashiorkor (Achar 1956; Higginson, Grobbelaar and Walker 1957; Suckling and Campbell 1957; Srikantia, Sriramachari and Gopalan 1957). Although it is gratifying to note that kwashiorker is not followed by cirrhosis, the stigmata of protein deficiency are seen long after the initial episode. The fatty change may become inconspicuous; but the liver cells continue to show a protein deficiency type of cytoplasmic rarefaction, indicating the need for sustained high levels of dietary protein. This continuing incipient protein deficiency type of liver cell damage probably reflects certain vulnerability of the liver cells to superadded secondary infections, which are ever so ubiquitous in the tropics. This is specially important in the light of the far reaching observations of Walters and Waterlow (1954) on hepatic fibrosis in West African children. They observed a higher incidence of cirrhosis in children suffering from malnutrition and malaria than in those who suffered from malnutrition only. They suggested that superimposition of malaria resulted in a greater stimulation of the mesenchymal tissue in the liver. We do not yet know the damaging effects on the liver of other infections, particularly of the respiratory, urinary and intestinal tracts. There is a great need to look beyond the immediate dietary rehabilitation of malnourished children if we are to effectively prevent the large scale incidence of cirrhosis in a community.

(iii) **Nutritional cirrhosis of late childhood**: Occasionally we do come across nutritional (fatty) cirrhosis of late childhood (Achar, Raju and Sriramachari 1959). The histological picture is not very different from that of nutritional cirrhosis in adults. Peculiarly enough, these cases never occur in children who have had kwashiorkor and therefore seem to be etiologically different.

(iv) **The probable role of nutrition in non-nutritional disorders of the liver**: Although the incidence of liver disease in adults and children is admittedly high,

not all of it is primarily attributable to malnutrition. The hazards of viral and toxic hepatitis appear to be equally important in the tropics. While in the West only a small proportions of individuals who suffer from viral hepatitis seem to develop permanent sequelae, the contrary seems to be the case in the tropics. Post-hepatitic type of cirrhosis is frequently encountered and account for a considerable proportion of our cases of cirrhosis (Aikat and Sen Gupta, 1958). The higher incidence of childhood cirrhosis, formerly known as infantile biliary cirrhosis, in the middle class as opposed to the well-to-do families also suggests that inadequate nutrition may play a contributory role, although it is now believed to be in the nature of a viral hepatitis (Achar, Raju and Srirama-chari 1959). Similarly, there is a form of childhood cirrhosis in Jamaica called veno-occlusive disease (Bras et al 1954). The liver damage is attributed to consumption of certain bush teas which contain the *senecio* group of alkaloids. Malnutrition seems to play a contributory role. These general observations speak in favour of ensuring adequate nutrition even in non-nutritional disorders of the liver.

(v) **Liver damage in conditioned malnutrition due to systemic disease:** Occasionally significant liver damage such as fatty infiltration may be observed in liver biopsies of patients who do not respond to the dietary rehabilitation. Under such conditions. it is well to remember the possibility of conditioned malnutrition due to systemic diseases like tuberculosis or diabetes. Their early recognition will help in ensuring appropriate treatment.

General Summary

Clinical, epidermiological and experimental investigations all the world over have conclusively shown that dietary deficiencies exert a profound influence on the liver. They explain the very high incidence of chronic liver disease in certain parts of the world. The specific dietary factors responsible for the initiation of different types of liver damage are fairly well recognised. This knowledge has considerably helped in the prevention and management of early cases with liver damage. Careful clinical, biochemical and histopathological follow-up of early cases is bound to help in a rational therapeutic approach as opposed to indiscriminate use of one or more lipotropic factors like choline and methionine. However, it is also essential to bear in mind the limitations of such treatment. What is good in the degenerative or destructive phase of hepatic pathology need not necessarily be good in the healing phase of hepatic pathology. In fact, our knowledge about the specific actions of nutritional factors in advanced chronic liver injury is woefully inadequate. Fundamental information about the nutritional and/or hormonal factors governing the continuous proliferation, arrest or disappearance of formed fibrous tissue in the course of chronic liver injury is urgently called for. Till then, our only hope lies in the early detection and treatment before permanent irreversible cirrhosis has set in.

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CASE NOTES *

Heart Diseases in Pregnancy

In a general hospital of our kind here, we often find that quite a large number of pregnant woman come with heart diseases in various stages. Too often, to our chagrin cases do pour in with not only failure of an advanced state, but in the last stages of life. If one ponders here, it is possible to think that such cases are preventable if thorough antenatal care had been given to these patients as well as proper advice and provided the patients follow the advice given. About 5% of the total admissions in this hospital has shown some sort of cardiac deficiency, the most common being mitral stenosis and the least common being congenital diseases. Coming to the management of heart diseases in pregnancy which itself is a complicated problem, more complicated than in a non pregnant women, one has got to think about the physiological changes that occur in a pregnant lady. There is an alteration of a circulatory stage during the second half of pregnancy and the blood volume increases by about 25%. The ratio between the plasma volume and the red cell volume is changed because there is no alteration in the red cell amount. Thus, if one examines the haemoglobin and the red cell counts of a pregnant lady, it will show a lower figure than what it really is because of this haemo-dilution. Significantly, there is a retention of water and salt, a natural phenomena occurring in pregnancy. Thirdly, there is an increased cardiac output, the maximum being in the 32nd week and this increase may be up to 50%. This has to occur because of the increase of blood volume and the dilution that has occurred which necessitates pumping out of blood more than what is necessary.

Next, in the progress of pregnancy, the diaphragm gets pushed up and the chest goes rather square and there is a significant decrease in the vital capacity thus restricting the oxygenation of blood. This lowering of the oxygenation plus the restricted space of the chest gives rise to breathlessness in pregnant woman.

The Heart enlarges from all these processes and breathlessness and oedema of the tissues may occur even in the absence of organic heart diseases. Systolic murmurs heard for the first time during pregnancy has no significance and do not indicate heart disease because it is a mechanical murmur produced by the embarrassment of the heart. But if the heart had already been damaged, then the increased load on the heart and circulation naturally exaggerates the original occurring deficiency. The effects of this on the further progress depends upon the state of the compensation of the heart. 90% of cases of heart diseases in pregnancy is due to rheumatic fever. 75% of this have Mitral disease with or without aortic involvement. Congenital heart diseases and hypertension account for the rest.

Thus, in these days of planned parenthood, opportunities must be given to these unfortunate sisters of ours by giving proper advice before they become pregnant. If it is decided during the early months of pregnancy that the patient is not likely to survive or go through pregnancy safely. it is advisable to terminate by dilatation of the cervix and curetting. This should not be attempted after the third month of pregnancy. On physical examination of such cases, we always find an enlargement of the heart, the apex being pushed up and out, the first sound is loud with

* Reprinted from the Proceedings of the North Arcot District Clinical Society 1957.

or without murmurs, the second sound in the pulmonary area is unusually loud and a third heart sound may also be generally heard. Extrasystoles are very common and occur in about 15% of the cases and systolic murmurs or diastolic murmurs occur depending upon the original condition.

Before going into treatment, we should proceed on the following lines:—Should this woman become pregnant? If she becomes pregnant, how is she going to fare? Has pregnancy any deleterious effect? If the answers to these questions are of satisfactory nature, then advice the patient to become pregnant. For the purpose of cardiac assessment, these patients are graded into four classes. But even before such grading is undertaken, if a heart patient is over 40, she is likely to get all complications and even Toxaemia of pregnancy and should be advised as such. Cases of pregnancy in elderly patients, with heart disease and even elderly primi patients as such without heart diseases fare badly.

Thus, in advising the patient, the functional grade of the patient, age of the patient and previous history and experience in pregnancy is most important. The functional grades (1) and (2) will do well and go to term with spontaneous delivery. There is always a sliding down of the grades during pregnancy and every pregnancy increases the grade of the patient by one step. A grade (3) patient is a danger signal and in grade (4) pregnancy has to be avoided at all costs. Thus grades (3) and (4) should not become pregnant, if possible, and cases even in grade (2) showing signs of auricular fibrillation or with a history of congestive failure, pregnancy is contra-indicated. But, by and large, pregnancy is well borne by patients with cardiac lesions. The cause of death is mostly congestive failure of heart and acute pulmonary oedema which is unpredictable and may occur suddenly and the balance may be upset and the patient go down hill. Now, apart from the dangers to the patients by heart diseases itself, in pregnancy there are other social factors to be looked into. A woman delivering a child has got to look after it, feed it and house it. This is a greater strain than even pregnancy itself. Taking all these into consideration, a proper advice must be given. Thus, in the pre-natal state, one should be careful to correct anaemia that is present, giving particular reference to any respiratory infection, advice regarding rest, sleep and work. They should be at least 10 hours in bed at night and 2 hours in bed during the afternoons. Grade II people should be admitted into the hospital at least one week before puerperium. As for persons in grade III, if they unfortunately become pregnant or want to become pregnant for want of a child, they should be looked after from the middle of pregnancy itself. Institutional treatment is necessary for them because cardiac failure is a normal feature among them. In grade IV if such patients become unfortunately pregnant, they generally succumb to this. Regarding treatment, cardiac failure must be treated energetically with digoxin, aminophylline and the judicious use of mercurials. Albumin will be present in the urine of most of such cases and may naturally be present in the later weeks of pregnancy too and it is not a contra indication for the use of mercurials which will relieve the oedema of the patient as well as reduce the increased blood pressure and thus relieve the embarrassed heart. If auricular fibrillation is present, it should be treated just like ordinary cases on its own merits, regarding whether to restore normal rhythm or not. Sub-acute bacterial endocarditis is a common feature in these damaged hearts and should naturally be treated with very high doses of penicillin. Penicillin should be in the order of 2 mega units per day or more. Pulmonary oedema,

if it sets in, is a danger signal and has to be treated energetically by Morphine, digoxin, aminophylline and if necessary blood letting.

We know that caesarian causes. less fatigue to a woman than delivery naturalis. As such, if the patient can stand the anaesthesia and if one is sure that delivery per naturalis is dangerous to life, it should be resorted to. But it is increasingly becoming accepted that caesarian should be resorted to only occasionally as delivery naturalis may not be dangerous as it appears first.

The tragic story of heart diseases in pregnancy is that onethird of the cases die in a few years. Onethird remain with severe handicaps provided they do not become pregnant again and strangely a small number may show an improvement after delivery. But this does not indicate that they should become pregnant again and expect more relief. Pregnancy with heart diseases reduces 5 to 7 years of the patients' life every time.

The periods of greatest danger are the seventh and eighth months and the first two days after delivery. Congestive cardiac failure manifests itself at those moments. But with due care and attention, a great majority of cardiac patients may be safely shepherded through pregnancy. It is important to note that postpartum injection of ergometrine may be dangerous if heart failure has been present as pulmonary oedema may set in due to sudden increase in the circulating blood volume.

A word about advice to resort to cardiac surgery in mitral stenotics. If the condition is early and if her history of previous pregnancy has not produced any failure of heart, if there is no mitral regurgitation along with it and the left auricle had not enlarged and if the patient insists on having children, the best advice would be to ask her to take to cardiac surgery. Even if the patient has had repeated attacks of pulmonary oedema or sudden reduction in exercise tolerence and if she is pregnant at that moment, she still can be attended to by the cardiac surgeon in the early months of pregnancy. A cardiac patient of moderate nature or with early lesions could be advised to have two children as one is not always satisfactory and accidents are to be thought of, and two is a satisfactory number. But more than that is greed and likely to produce total eclipse.

Functional Grades are.

Grade. I Has heart disease but has no symptoms worth mentioning.

Grade. II Has mild symptoms especially on more than moderate exertion (dyspnoea) ankle oedema evenings.

Grade. III Symptoms of dyspnoea on slight exertion-ankle oedema etc.

Grade. IV Dyspnoea even at rest, with signs of gross failure.

ASSOCIATION NEWS

ANAMALLAI BRANCH

A special meeting was held on 9—8—58 with Dr. M. K. R. Jayachandran the President in the Chair. The members condoled the death of Dr. S. Dorai Raj, the founder member of the Branch, and a resolution was sent to the bereaved family. After the elections of Presidentship and three Vice-Presidentships of the Central I. M. A. for 1958–59, a farewell party to Dr. Krishnamurthy was given on the occasion of his departure from Anamallais.

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A meeting was held on 30—8—58 with Dr. M. K. R. Jayachandran presiding. Elections of 2 Vice-Presidents for Madras State Branch were conducted. Dr. M. James gave a talk on treatment of Trauma with special reference to the injuries of Tea Plantations, and Tea Factory, and in general dealt with injuries of head, hand, and fractures neck of Femur.

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A clinical meeting was held on 27-10-58 under the chairmanship of Dr. M. K. R. Jayachandran and Dr. M. V. Krishnamurthy, D.M.O., Coimbatore, addressed the members on Myocardial Infections, and some salient aspects of the same.

COIMBATORE BRANCH

A meeting of the Association was held on 2nd August, 1958 in the premises of the Kuppuswamy Naidu Memorial Hospital, Pappanaickenpalayam, Coimbatore. Dr. T. V. Sivanandam, M. B. B. S., M. L. C. President, presided.

Dr. Y. P. Vasudevan, M.B.,B.S., Dean of the Hospital welcomed the members of the Association. Dr. A. C. Devaraj, B.A., L.R.C.P. & S. (Edin.) L.R.F.P. & S. (Glaxo) D.M.,R.E. (Cantab.) read the paper on "X-Rays in Diagnosis and Treatment" with elaborate details.

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The monthly meeting of the Association was held on Saturday the 30th August 1958 in the Association premises. Dr. D. Sundareswaran, M. B., B. S., L. O., Vice-President presided.

There was an election for the Two Vice-Presidents of the Madras State Branch of IMA for the year 1958–59.

Dr. P. S. Venkatachalam, M B., B. S., of Nutrition Research Laboratories, Coonoor addressed the members on "The measurement of Body weight and its significance."

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A combined meeting of the Coimbatore District Medical Association and Palghat District Medical Association was held on Sunday the 28th September 1958 in the Government Head Quarters Hospital, Palghat. Dr. C. H. Venkateswaran, presided over the meeting in the absence of both the President and Vice-President of the Coimbatore Branch.

Dr. T. K. Raman, M.D., D.T.M. (Cal.), addressed the members on "The management of Heart Diseases".

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The combined meeting of the Coimbatore District Medical Association, the Clinical Association of the Coimbatore District Headquarters Hospital and the Palghat District Medical Association was held on Sunday the 12th October 1958 in the Government Headquarters Hospital, Coimbatore.

Dr. M. V. Krishnamoorthy, District Medical Officer, Coimbatore presided over the meeting.

There were demonstrations of interesting cases by the Medical Officers of the various Departments of the Government Headquarters Hospital, Coimbatore.

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A Meeting of the Association was held on Saturday the 22nd November 1958 in the Association premises. Dr. T. V. Sivanandam, M. B., B. S., M. L. C., President of the Association presided.

There were elections of the delegates to the 13th Madras State Medical Conference and the 35th All India Medical Conference of Indian Medical Association to be held at Cuttack.

Dr. D. Paranjothy, M.R.C.O.G. (Lond)., etc., addressed the members on "Abdominal Pregnancy".

CHINGLEPUT BRANCH

The meeting of the Association was held on Saturday the 20th December 1958 at Venugopal Club, Chingleput.

Dr. N. S. Narasimmha Iyer, F. R. C. S. delivered a lecture on "Recent advances in Fracture treatment".

ERODE BRANCH

The Annual Meeting of the Association was held on Saturday the 6th Sept. 1958, with Dr. T. S. Bhaskaran in the Chair. Dr. N. Subramaniam, M.B., B.S. Honorary Physician, Govt. Head-Quarters Hospital Coimbatore, spoke on "Prolonged and perlexing fevers". Dr. P.K.Kalyanaraman, M.B., B.S., presided over the Session.

There were two talks in Surgical Session. The first was presided over by Dr. L. K. Muthuswamy, M. B., B. S., Dr. D. S. C. Devadhar, M.S., F.R.C.S. spoke on "New Surgical approach to treatment of Cirrhosis of the Liver." In the Second part of the Surgical Session, Dr. Saratchandra, M. S., took the chair. Dr. K. A. Kalyanam, F.R.C.S. (E) D.M.R. spoke on "Some problems in the treatment of Peptic Ulcers."

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A business meeting of the Association was held in the Association Library Hall, with Dr. T. S. Bhaskaran in the Chair. The following were elected as office-bearers for the year, 1958-59.

President: Dr. E. S. Venkatraman.
Vice-President: Dr. V. Ramalingam.
Secretary: Dr. M. N. Shenoy.
Treasurer: Dr. M. M. Shenoy.
Representative on Central Council: Dr. N. C. Kuppusamy.
Representative on State Council: Dr. L. K. Muthuswamy.

There was a lecture by Dr. R. Saratchandra on "Surgery for General Practitioners and how to do it correctly'.

MADRAS CITY BRANCH

A meeting of the Association was held on Saturday the 13th December 1958 at Madras Medical College.

Dr. Lowry Dobson, Chief Medical Officer, Radiation and Radioactive Isotopes, W. H. O. Head-Quarters, Geneva, addressed the members on "Radiation in Medicine".

MADURAI BRANCH

The Monthly meeting of the Association was held on Saturday the 22nd November 1958 under the Presidentship of Dr. M. Venkatachalam Chetty, L.M.P., Madurai. Dr. R. Subramaniam, M.D., M.R.C.P. (Lon). Physician, General Hospital, Madras., spoke on "Drug Therapy and Hypertension." There was a film show by Messrs. May & Baker Private Ltd., and Messrs. Ravison Pharmaceuticals (Pfizer) Bombay.

NILGIRI BRANCH

The monthly meeting of the Association was held on Saturday the 13th December 1958 at Military Hospital, Wellington. Dr. Morris Schaeffer, M.D., Director of the Virus & Rickettsial Units, Communicable Disease Center, Montgomery Alabama, U. S. A., addressed the members on "Differential Diagnosis of Central Nervous System Infections."

SOUTH ARCOT BRANCH

The General Body Meeting of the Association, was held on Saturday the 23rd August '58 in the Government Head Quarters Hospital premises, Cuddalore.

Two Vice-Presidents for the Madras State were elected. D. S. Sankararaman, M.B.B.S., Cuddalore O. T. gave a talk on 'The Problem of the Failing Heart'.

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The Annual Meeting of the South Arcot Branch I. M. A. was held on Saturday the 20th September, 1958 in the District Board Hall, Cuddalore with Dr. V. Viswanathan the President in the chair. Dr. A. S. Ramakrishnan, M.S., F.I.C.S., Hony. Surgeon, Stanley Hospital, Madras gave a talk on "Surgical Amoebiasis" and Dr. AL. Annamalai, M.R C.P., etc. Physician, General Hospital, Madras spoke on "Portal Hypertension".

The following office-bearers were elected :

President:

Dr. K. G. Sadagopa Iyengar.

Vice-President:

Dr. K. Rangasamy.

Hony. Secretary:

Dr. A. A. Shukoor.

Hony. Joint Secretary:

Dr. M. V. Bhat.

Executive Committee Members:

1. Dr. C. G. Seshachalam Naidu.
2. Dr. N. Ramachandran.
3. Dr. V. N. Viswanathan.
4. Dr. V. Viswanathan.
5. Dr. Jaya Devi.

Representative to the Central Council:

Dr. P. Vaidyanathan.

Representative to the State Council:

1. Dr. V. Krishnamoorthy.
2. Dr. P. Vaidyanathan.

Representative to the Hindu Kusht Nivaran Sangh :

Dr. V. Ekambaram.

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The monthly meeting of the Association was held on Saturday the 25th October, 1958, in the Government Head Quarters Hospital premises, Cuddalore with Dr. K. G. Sadagopan in the chair. Dr. M. V. Bhat, M.S., Resident Medical Officer, Cuddalore gave a talk on "The Vericose Veins of the leg."

SALEM BRANCH

A meeting of the Association was held on Sunday, the 28th December 1958 at Foulkes' Hall, District Board, Salem.

Under the auspices of the Salem Head-Quarters Clinical Society, some interesting cases were demonstrated.

Messrs. Ciba (India) Ltd. exhibited the following films:

(1) PERITONEOSCOPY.

(2) THE HOME CONFINEMENT.

TIRUCHY BRANCH

The 30th Annual Meeting of the Association was held on Sunday the 26th October 1958 in the Association premises Tiruchy. The following office-bearers were elected for the year 1958—1959 :

President:

Dr. R. Sambasivan.

Vice-President:

Dr. G. Viswanathan.

Secretary:

Dr. V. K. Ranganathan

Treasurer:

Dr. M. V. A. Iswaran.

Executive Committee:

Dr. A. Dharmarajan.
Dr. S. Venkatesan.
Dr. P. Palaniyandi.
Dr. G. Biharilal.
Dr. N. V. Muthukrishnan.
Dr. G. Sakunthala.
Dr. T. V. Sundaram.
Dr. R. Kalamegham

State Council

Dr. T. V. Srinivasan.
Dr. A. Dharmarajan.
Dr. R. Ganesan.
Dr. V. Enok.
Dr. S. Venkatesan.
Dr. V. Ananthagiri.

Central Council:

Dr. T. V. Srinivasan.
Dr. N. C. Subramanyam.

The following lecturers addressed the members on the following subjects.

Dr. V. S. Subramanyam, M B.B.S. etc.
—Recent Advances in Ear Surgery.

Dr. Harivaishnava, M.R.C.P.
—Corticosteroids.

Dr. C. S. Sadasivam, M.S.
—Surgical management of certain Heart Diseases.

Dr. K. S. Sanjeevi, M.D.
—Common diseases of the liver.

Dr. M. G. Prabhu, M.D.
—Bronchial Asthma and Tropical Eosinophilia.

Dr. S. Nagaswamy. M.B.B.S., etc.
– Some paediatric problems.

* * * *

The 30th Inaugural Meeting of the Association was held on Saturday the 13th December 1958 in the premises of the Association Buildings, Tiruchy.

Dr. P. Arunachalam, M.D., M. R. C. P., T.D.D. D.M.R., Madras addressed the members on "Diseases of the Thyroid Gland in Private Practice".

* * * *

A meeting of the Association was held on Saturday the 20th December 1958 in the premises of the Association Buildings, Tiruchy.

Dr. V. Balagopala Raju, M.D. (Ped), D.C.H., Madras addressed the members on "Drug Therapy in Paediatrics".

* * * *

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Dr. AL. Annamalai, M.B., M.R.C.P., D.T.M. & H.

(B) Dr. A. Balasubramanyam, M.B.B.S.
Dr. W. R. Betts, M.R.C.S., L.R.C.P., F.C.S.

(C) Dr. M. V. Chary, M.B.B.S., M.R.C.P., D.T.M. & H.

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